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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/847,667	05/01/2001	Subhash Gupta	54364	4777

7590 12/04/2003

The Law Offices of Calvin B. Ward  
Suite 305  
18 Crow Canyon Court  
San Ramon, CA 94583

EXAMINER

MITCHELL, JAMES M

ART UNIT	PAPER NUMBER
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2827

DATE MAILED: 12/04/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/847,667

Applicant(s)

GUPTA ET AL.

Examiner

James M. Mitchell

Art Unit

2827

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 07 July 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 May 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-10 are rejected under 35 U.S.C. 112, first paragraph, because the specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make or use the invention commensurate in scope with these claims.

The invention involves unpredictable chemical reactions through the use of CMP, a wafer material and a stop layer. Absent a statement applicable to the genus as a whole, it is indeterminable from the disclosure of the particular species what other species will work; hence, it is indeterminable what other species are members of the genus. As a result, a person skilled in the art could not make the genus as a whole without undue experimentation. Chemical reactivity is a most unpredictable and empirical art and it is well settled that the requirement that the claims be commensurate in scope with the enabling disclosure is particularly stringent in this area of technology. See *In re Doumani* 126 USPQ 408, *In re Grant* 134 USPQ 248, *In re Fisher* 166 USPQ 18, *Mobil Oil Corporation v. W. R. Grace and Company* 180 USPQ 418, *In re Slocombe* 184 USPQ 740, *In re Mercier* 185 USPQ 774, *Corona Cord Tire Company v. Dovan Chemical Corporation* 192 CD 255 and *In re Hawkins* 174 USPQ 157.

### ***Claim Rejections - 35 USC § 102***

Art Unit: 2827

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-3 and 5-7 are rejected under 35 U.S.C. 102(e) as being anticipated by Schrems (US 2002/0125521).

Schrems (Fig 1; Claims 8, 9) discloses an integrated circuit wafer comprising; a substrate comprising a wafer material ("wafer" not labeled), said substrate having first and second surfaces, said first surface having a circuit layer comprising integrated circuit elements (112, 113, 114) constructed thereon; a plurality of vias (space taken by "capacitors"; Par. 0076) extending a first distance from said first surface of said substrate into said substrate, said first distance being less than the distance between said first and second surfaces of said substrate, said vias having a bottom surface comprising: a stop layer ("tungsten nitride") covering said bottom surface, said stop layer comprising material that is more resistant to CMP than said wafer material; and wherein said wafer material comprises silicon (Par. 0011); and vias lined with a layer of an electrically insulating material (164); and said vias are filled with a tungsten, electrically conducting material (161); wherein a dielectric layer (189) having top and bottom surfaces, said dielectric layer covering said circuit layer such that said bottom surface is in contact with said integrated circuit layer; and a plurality of electrical

Art Unit: 2827

conductors (183) buried in said dielectric layer and making electrical connections to said integrated circuit elements.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3 and 7-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Clements (US 4,054,875).

Clements discloses a wafer material (10), said substrate having a first and second surface, the first surface having a circuit layer comprised of an integrated circuit formed thereon (Lines 26-27, Column 1; Lines 56-57, Column 8) with an inherent dielectric layer having a top and bottom, such that a bottom surface is in contact with said integrated circuit layer (via conventional IC fabrication) covering circuit layer, a plurality of vias (Fig.1, Item 25) extending a first distance from said first surface (Shown more clearly in Fig. 12); said first distance being less than the distance between said first and second surfaces of said substrate, said vias having a bottom surface-comprising an insulating, etch stop layer that is lined on said bottom surface, said vias comprising a  $\text{Si}_3\text{N}_2$  stop layer ("etch resistant"; Fig 9; Item 40) that inherently provides a more resistant to chemical/ mechanical polishing than said wafer material, the via filled with an electrically conductive material (Lines 1-2, Column 10); with the vias terminating in an electrically conducting pad (22, 33) with the wafer, the integrated circuit inherently being formed beneath the pad (Lines 49-50, Column 6), and an electrical conductor (the conductive material in the via) connected electrically to said via (Fig. 9); wherein at least one via extends through the dielectric layer.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 4 rejected under 35 U.S.C. 103(a) as being unpatentable over Schrems (US 2002/0125521).

Schrems does not appear to explicitly disclose the insulating layer is silicon dioxide, however examiner takes official notice that silicon dioxide was well known in the art at the time of present invention and that it would have been obvious to one of ordinary skill in the art to form the insulating layer of Schrems as a silicon dioxide in order to provide an oxide as required by Schrems (Claim 8).

***Response to Arguments***

Applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James M. Mitchell whose telephone number is (703) 305-0244. The examiner can normally be reached on M-F 10:30-8:00.

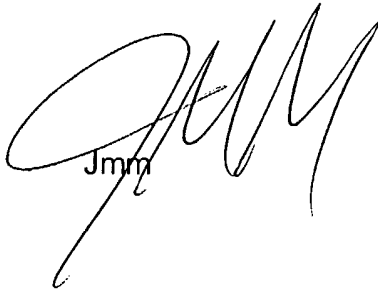
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamand Cuneo can be reached on (703) 308-1233. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.


Application/Control Number: 09/847,667

Page 6

Art Unit: 2827

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

  
Jmm

  
DAVID E. GRAYBILL  
PRIMARY EXAMINER